Creating Videos and Animations to Enhance Organic Chemistry Lecture and Laboratory Instruction

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QR Code for my homepage

Teaching & learning resources

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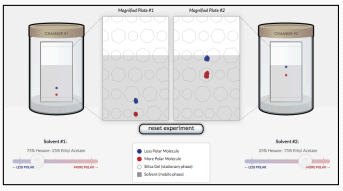
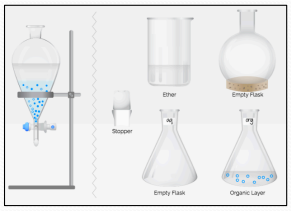
Why use videos/animations as supplements?

- Better than a book (if a picture is worth 1,000 words…)
- Better than a lecture?
  - Asynchronous learning – 24/7 access
  - Asynchronous teaching – not confined to 50 minutes
  - Students are able to pause, repeat, read captions, take notes
- Global: bring in new instructors/reach a wider audience
- For "flipping" the classroom
  - Enables in-class problem solving, active learning
  - Introductory and/or boring material (IUPAC, hybridization)
- Narrated answer keys, homework solutions (3D Sketch)
- Material that is likely to be reviewed later (Reagent Table)

Technology for Lab Preparation

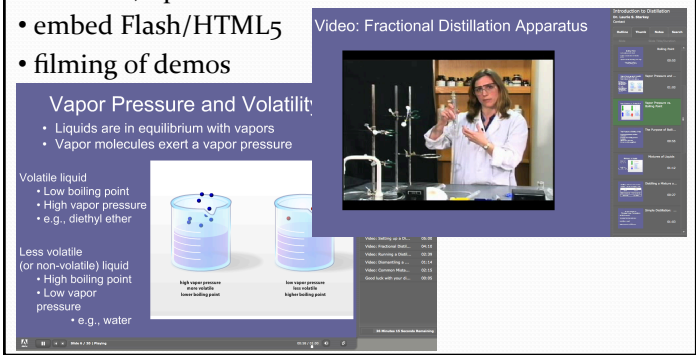
- **Online Quizzes** (Blackboard):
  27/7, instant feedback, formative assessment
- **Animations** (with worksheet) TLC | Extraction





Online Tutorials for Lab Preparation

- **Adobe Presenter** (PowerPoint plug-in)
- narrated, Pp animations
- embed Flash/HTML5
- filming of demos



Online Tutorials for Lab Preparation

http://www.cpp.edu/~lsstarkey/ochemlab

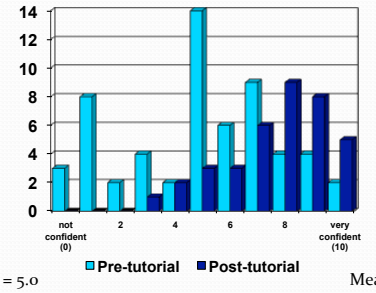
over 37,500 worldwide visitors to website since 2008

United States	32,571	87.00%
Canada	663	1.77%
India	441	1.18%
Philippines	434	1.16%
United Kingdom	198	0.53%
Iran, Islamic Republic…	122	0.33%
Thailand	121	0.32%
Japan	119	0.32%
Malaysia	119	0.32%
China	118	0.32%

Benefits: unlimited time, asynchronous, reviewable, available in the future (website/YouTube vs. LMS)

Assessment of Technology

Prelab Survey: Confidence in Running Distillation Experiment



Mean = 5.0

Mean = 7.6

Making videos for the flipped classroom & beyond

- Online lectures – search YouTube, Educator.com, EdX
- Create your own! "Old school-style" recording of narrated homework solutions (iPhone) 3D sketch reagent table
- Latest technology: transparent lightboard! (how it works)
- Record and edit videos with Camtasia (screen capture/voice)
  Tutorials: http://tiny.cc/CreatingPedagogicalVideos
  Examples: Engineering tutorial and solved problem
- Lecture-capture w/iPad apps - can export videos to YouTube
  Explain Everything Cyclohexane and Doceri Reagent Table

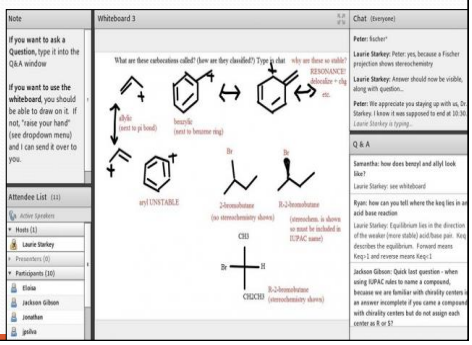
Don't Reinvent the Wheel!

YouTube demos, simulations, animations CHM 315
- free, no hazards, can pause/watch later, etc.
- find resources: PhET, MERLOT.org, LOCAL

Tech-Enabled Communication

Virtual office hours (Adobe Connect)

- the night before each exam, 9:30-10:30 pm
- can record sessions
- Chat, Q/A
- *supervised* peer-to-peer learning



Sharing your work

- Private (LMS) or Public (webpage link, MERLOT)
  - Include captioning for accessibility (Hablas Español? Si!)
- Maximum exposure: make a YouTube channel!
- ChemistryConnected, created in 2012, has over 480,000 views and over 970 subscribers
  - Pre-lab tutorials, solved problems, demos of hands-on elementary school science activities
  - Over half the views have come from outside the U.S. (200 different countries)

http://www.youtube.com/user/ChemistryConnected

Making it Academic – SoTL Research

Turn your innovation into a research project!
- Formulate a question
- Collect data (can be a great "wow" factor)
  - Get IRB approval (Human Subjects)
  - Pre- vs. Post-Intervention
  - Quantitative and Qualitative data
- Perform assessment; analyze data
- Share results with colleagues and the world!
  - Conference paper, Ed. Journal article, RTP

Getting Buy-In and Support from Students, Faculty, Institution

- Poorly implemented interventions unlikely to succeed
  - If you are enthusiastic, students are likely to be too
  - Explain WHY you do what you do – pedagogy matters!
- Share data and testimonials and data with colleagues – encourage a SoTL-supportive culture
- Institutional $upport: workshops, summer institutes, release time, mini-grants, free iPads (!), Faculty Learning Communities (clicker, SoTL, technology)
- Collaborate with research students, other institutions…